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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,520	01/30/2002	Wilfried Knott	512425-2070	8463

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EXAMINER

MORILLO, JANEL COMBS

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,520

Applicant(s)

KNOTT ET AL.

Examiner

Janelle Combs-Morillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7, 9, 14, 15, 19-26, 29, 46 and 47 is/are pending in the application.
- 4a) Of the above claim(s) 19-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 9, 14, 15, 24-26, 29, 46 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 080304
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 19-23 are objected to because of the following informalities: said claims are withdrawn pursuant to the restriction requirement; and should be labeled as “(Withdrawn)” or “(Withdrawn, currently amended)”, etc. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 7, 9, 14, 15, 24-26, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-241780 (JP'780) in view of Knott (US 5,972,285).

Concerning independent claim 1, JP'780 teaches a method of making a metal foam by mixing 0.1-5wt% titanium hydride blowing agent with molten metal (such as an aluminum alloy, see Table 1), pouring into the cavity of a mold, and reheating to undergo foaming (abstract). JP'780 does not teach adding the metal and blowing agent to a die cavity of a die casting machine. However, given the disclosure of JP'780 (who teaches the addition of the hydride blowing agent and molten aluminum into a mold cavity), it would have been obvious to one of ordinary skill in the art to add the metal and blowing agent to a variety of suitable cavities, including a die cavity.

JP'780 teaches titanium hydride as the preferred blowing agent, and does not teach using magnesium hydride. However, Knott teaches that magnesium hydride is a suitable blowing agent for producing aluminum alloy foams (abstract). It would have been obvious to one of ordinary skill in the art to use magnesium hydride as a blowing agent, in the process of foaming aluminum melt in a cavity as taught by JP'780, because Knott teaches that said blowing agent is a suitable gas producing agent (column 2 lines 49-52), suitable to foam aluminum alloys (column 3 line 52).

Concerning claims 2, 7, 25, and 26, the process stated above meets these dependent claim limitations.

Concerning claim 3, JP'780 teaches mixing the blowing agent and metal melt before charging into a cavity (abstract).

Concerning claim 4, JP'780 does not mention mixing in "the shot-sleeve". However, though JP'780 does not specify mixing in said particular compartment, JP'780 does teach a process of producing a metal foam substantially as presently claimed, including mixing prior to filling said cavity. Therefore, given the disclosure of JP'780, it is held to be within the level of one of ordinary skill in the art to mix the metal and blowing agent in a separate compartment, such as a shot-sleeve, etc., before introducing said mixture into said cavity.

Concerning claim 9, which mention said cavity is underfilled, JP'780 mentions an expansion of $\geq 65\%$ (see [0019], Table 1). It is within the level of one of ordinary skill in the art, given the disclosure of JP'780, to underfill the mold in order to prepare for expansion.

Concerning claim 15, JP'780 at [0024] teaches that the mold is heated in a furnace along with the alloy.

Concerning claim 14, which states the die cavity is not heated or said process is a cold-chamber process, though JP'780 teaches a process of forming a metal foam by heating the mold and metal in a furnace, Knott teaches a process of placing a foamable metal (with added blowing agent) into a cavity in a mold, and adding heat to said foamable metal (i.e. not directly heating the die/cavity, see column 6 lines 32-38). It would have been obvious to one of ordinary skill in the art to perform a process of foaming, while only heating the metal, as taught by Knott, because said process is held to provide a suitable foamed metal.

Concerning claim 29, Knott teaches that the blowing agent can be an autocatalytically produced light metal hydride (column 2 lines 48-53). Knott teaches that said produced hydride provides for more uniform foaming (column 3 lines 1-3). It would have been obvious to one of ordinary skill in the art to use an autocatalytically produced light metal hydride, as taught by Knott, for the blowing agent of JP'780, because Knott teaches that said hydride is suitable as a foam blowing agent, and because said hydride provides for more uniform foaming.

Response to Amendment

4. In the response filed on August 16, 2004, applicant amended claims 1-4, 7, 24, 25, 29, and added new claims 46 and 47. The examiner agrees that no new matter has been added.

Applicant's argument that the present invention is allowable over the prior art of record because the prior art does not teach foaming of the metal melt and the blowing agent under pressure in the die cavity of a die-casting machine has not been found persuasive (arguments p 8). As stated above, it is held to be within the scope of the prior art to form said foam in a cavity such as a die cavity (see above discussion). The instant claim does not mention a die casting step.

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Applicant argues the presence of pressure is inherent in a die-casting machine (arguments p 7), however, the examiner submits that it is through the process of die casting that pressure is applied; a die casting machine/die cavity may have the capability of being pressurized, but it is not implicitly pressurized.

5. Applicant's argument that the present invention is allowable over the prior art of record because applicant have discovered a process of producing a foam with a structure superior to that of Knott, has not been found persuasive. Said evidence must be in the form of an oath or declaration. When any claim of an application or a patent under reexamination is rejected or objected to, any evidence submitted to traverse the rejection or objection on a basis not otherwise provided for must be by way of an oath or declaration under § 1.132 (see § 1.132, "Affidavits or declarations traversing rejections or objections").

Allowable Subject Matter

6. Claims 46 and 47 are allowable over the prior art of record.

7. The following is an examiner's statement of reasons for allowance: the closest prior art, JP'780 or JP'780 in view of Knott, does not teach or suggest the presently claimed method of producing an aluminum or aluminum alloy metal foam using magnesium hydride as a blowing agent, complete with the presently claimed step of foaming the metal melt and blowing agent at a pressure $\geq 10^7$ Pa (cl. 46) or 10^7 - 10^8 Pa (cl. 47) in the die cavity of a die casting machine, substantially as presently claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-4, 7, 9, 14, 15, 24-26, 29 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 5, 8-13, and 15-20 of copending Application No. 10/162978. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'978 teach a casting process of foaming an aluminum melt with a magnesium hydride blowing agent, wherein said foaming occurs in the die cavity of a high pressure die casting machine (see cl. 1, 12, 18, 19, 20), substantially as presently claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700


JCM

November 1, 2004